## ST. ANDREWS LOCK AND DAM

The upper canal is 1200 feet in length, bottom width 100 feet, and side slopes of 1 on  $1\frac{1}{2}$ . Bank protection of broken stone is laid in a prepared trench to prevent wave erosion.

At the upper end of the canal are the upper entrance piers, constructed of concrete, the pier on west side being of a reinforced concrete type similar of section to those at head of the Lock.

The pier on east side of upper entrance is constructed to withstand ice shoves during spring freshets.

## THE DAM

A particular study was made of the conditions of the river with a view to the adoption of a type of dam which would interfere, as little as possible, with the regimen of the stream during freshet period.

The Red River has a drainage basin of some 63,400 square miles and takes its source south of the International Boundary. The River has a discharge varying from 4,000 to 80,000 cubic feet section from periods of low water summer discharge to spring freshets. The conditions during the spring freshets are further aggravated by ice gorging in the lower portions of the stream. The ice gorging is principally caused by the fact that the break up takes place first in the head waters, bringing a rush of water to the lower portion of the stream before the influence of mild weather has been felt. In periods of freshet

6